

76

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NAVAL MEDICAL

R&D NEWS

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COMMANDER'S HOLIDAY MESSAGE



Another year is almost over!

It is remarkable how quickly time passes when you're staying busy, which we all did this past year. It seemed like yesterday when we were kicking off 2018, and here we are about to usher in 2019.

With the December festivities upon us and the threat of snow in the air, I want to wish you and your families a joyous holiday season and thank each of you for the outstanding service and support you provide to our Navy, our nation and the entire Navy Medicine R&D Enterprise. I am humbled by your selfless dedication and the exceptional job you do each day to protect the health and well-being of our Sailors and Marines across the globe.

You have worked hard and often sacrificed with long hours, endless paperwork and urgent deadlines. As you visit with loved ones, shop for that perfect gift, or engage in recreational pursuits during these joyful weeks, take a moment to reflect on the special appreciation our Navy has for the innovative work being accomplished across the enterprise. You should be proud of your many achievements, and I encourage each of you to share these accomplishments with your family, friends, and shipmates.

For those of you unable to be with family and friends during the holidays, you are in our thoughts and we are grateful for what you are doing. For those at home, now is the time to celebrate with families, friends, and loved ones.

Again, please enjoy the holidays, but most importantly take care of each other. When traveling, take precautions during these hectic times to ensure you and your families arrive and return safely.

I am grateful to be your Commander and witness the undeniable innovative research and development you deliver around the world every day.

Happy Holidays,

CAPT Adam W. Armstrong, MC,
Commander, Naval Medical Research Center



Senior Chief Hospital Corpsman Edgar Nunez assumed responsibility as NMRC's senior enlisted leader (SEL) from Senior Chief Hospital Corpsman Paul Duncan during a ceremony presided over by Capt. Adam W. Armstrong, commander, Naval Medical Research Center Sept. 27.

While addressing the audience, Armstrong stressed the importance of the role of the senior enlisted leader and thanked Duncan for his successful tenure.

Afterwards, Nunez said he looks forward to helping mold the future of the command by supporting the mission to enhance deployment readiness and synergizing enterprise efforts to become a stronger team and get the job done.

Nunez, a native of Jalisco, Mexico, and enlisted in the Navy in 1999. He is a graduate of Naval Hospital Corpsman "A" School, Surgical Technology Program and Field Medical Service School.



With great sadness, retired Capt. Dr. L. Edward Antosek, former commanding officer of Naval Medical Research Unit-3 (NAMRU-3) in Cairo, Egypt and Naval Medical Research Center (NMRC), passed away the early morning of Nov. 9.

He served in the Navy as a family physician and flight surgeon from 1976-2007. While wearing the cloth of our nation he honorably served on the battlefield, and held a variety of positions, including his command of NAMRU-3 and NMRC. As chief executive for the biomedical branch of the Navy Medicine Research Laboratory System he directed naval medical research efforts and oversaw a rich global network of academic and professional research collaborations. He retired in 2010 after 30 years of service. His last years were as an aviation medicine expert in the Ft. Lauderdale, Florida area.

Please keep him in your prayers, and his family and close friends who grieve his loss most deeply. He will be buried Jan. 4 with full military honors at the National Cemetery in Salisbury, North Carolina.

NAVY SCIENTISTS LOOK TO IMPROVE SAFETY IN LOW OXYGEN ENVIRONMENTS

By Megan Mudersbach, NAMRU-D PAO



KISSIMMEE, Fla. - Researchers from the Naval Medical Research Unit Dayton (NAMRU-Dayton) presented human performance research during a breakout session at the 2018 Military Health System Research Symposium (MHSRS) in Kissimmee, Florida, Aug. 22.

“This research study aims to improve safety in a variety of tasks that might occur in low oxygen environments, such as our aircrew and diving communities,” said Lt. Todd Seech, aerospace experimental

psychologist and co-investigator.

By examining the efficacy of an electroencephalography (EEG) signal complex, known as a Mismatch Negativity/P3a, Navy researchers may be able to predict the onset of performance deficits in low oxygen environments earlier and more accurately than pulse oximetry.

Test subjects completed two testing sessions on separate days that differed only in simulated altitude environment. One session occurred at 17,500 feet and the other session occurred at 500 feet. In both, participants performed a continuous hand eye coordination task while EEG and finger pulse oximetry were recorded. The study procedures took place in NAMRU-Dayton's Reduced Oxygen Breathing Environment (ROBE).

Initial results suggest EEG may serve as an early predictor of performance decline during exposure to low oxygen. The amplitude of the awareness was reduced in the hypoxia compared to the normoxia condition suggested an impairment in attentional reorienting.

“With further development, EEG may represent a sensitive method for detecting hypoxia prior to symptom onset and performance decrement in pilots,” said Dr. Kara Blacker, research psychologist, contractor with Henry M. Jackson Foundation for the Advancement of Military Medicine assigned to NAMRU-Dayton...(cont.)

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FORGING PARTNERSHIPS: NAMRU-2 STRENGTHENS COLLABORATIVE EFFORTS WITH DUKE-NUS

By Lt. Cmdr. Kimberly Edgel, NAMRU-2 Collateral PAO



SINGAPORE - The U.S. Naval Medical Research Unit No. 2 (NAMRU-2) concluded its Biannual Science Summit with a retreat hosted by the Programme in Emerging Infectious Diseases (EID) at the Duke-National University of Singapore (NUS) Medical School.

The retreat held in late May, was led by EID's Professor Linfa Wang. EID partners with groups like NAMRU-2, local hospitals, government laboratories and biotech firms to develop new and effective methods for the treatment, prevention and

control of novel and emerging pathogens.

It began with introductions from Wang, NAMRU-2's commanding officer Capt. Patrick Blair and NAMRU-2 science director Cmdr. Frederick Stell. They provided an overview of the 2018-2019 Armed Forces Health Surveillance Branch Global Emerging Infections Surveillance (AFHSB-GEIS) request for proposals in the focus areas of Antimicrobial Resistant Infections, Enteric Infections, Febrile and Vector-borne Infections and Respiratory Infections.

Lt. Cmdr. Nicholas Martin, Deputy of the Defense Malaria Assistance Program (DMAP), presented a synopsis of DMAP, which was created to support and extend Department of Defense global research relevance to field, test, and evaluate malaria countermeasures for the U.S. warfighter.

Departmental briefs for NAMRU-2 Clinical Research and Field and Laboratory Research Departments were given by Capt. Dennis Faix and Lt. Cmdr. Jeffrey Hertz, who spoke about ongoing research centered at our laboratory in Phnom Penh, Cambodia, with partners in Laos, Malaysia, and Vietnam, and throughout numerous field sites in the Southeast Asia region.

EID Professors Gavin Smith, Sheemei Lok, Ashley St. John, Laura Rivino, Danielle Anderson, and Raphael Zellweger delivered summaries of their current studies, covering zoonotic disease risk, use of cryo-electromicroscopy to understand virus structure, immunity to flaviviruses...(cont.)

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NMRC RESEARCHERS SEEK WAYS TO IMPROVE THE SAFETY, COMFORT AND SURVIVABILITY OF THE WARFIGHTER

By Steven Van der Werff, NMRC PAO



KISSIMMEE, Fl. - Researchers from Naval Medical Research Center (NMRC) presented their work: Enhancing Human Performance & Survivability in Extreme Environments during a breakout session at the Military Health System Research Symposium Aug. 21.

A team of scientists led by Dr. Aaron Hall, research physiologist, Undersea Medicine Department, discussed their work to improve

the safety, comfort and survivability of the warfighter.

According to Hall, the goal of the discussion was to bring a diverse group of people together working on various, varied disparate extreme environment challenges and dealing with very different kinds of physiology and put them all in one room, then show how there are common overlapping ideas and research which can be used to develop new collaborations and new ways to approach this type of research.

“We interact by interacting with our human partners. They are right next to the warfighter and so we get information fed into us about their requirements, and their needs,” Hall said. “We are challenged with operators working up in space, high altitude, and diving - from special ops to shallow water, using different breathing mixtures, or very deep diving, so the idea is each one of these scenarios has particular physiological risks associated with operating and surviving in those environments.”

Lt. Geoffrey Ciarlone, research physiologist, spoke about developing a program with the undersea medicine department to mitigate hypoxia or high altitude dependent decreases in cardio vascular performance of muscular-skeletal strength.

Guest researcher, Lt. Cmdr. William Cronin, an undersea medical officer, explained ways to...(cont.)

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NAMRU-SA DEVELOPING DIAGNOSTIC TOOLS TO QUICKLY IDENTIFY HARMFUL BACTERIA IN WOUNDED WARFIGHTERS

Courtesy of Joint Base San Antonio - Fort Sam Houston



SAN ANTONIO - Finding and developing diagnostic tools that can better identify harmful bacterial pathogens in wounded warfighters is the objective of two projects being conducted at Naval Medical Research Unit San Antonio at Joint Base San Antonio Fort Sam Houston.

The research projects involve the use of surface-enhanced Raman spectroscopy, or SERS, and technological advances to effectively identify and detect bacterial pathogens in the wounds of injured service members

in a timely manner, so the bacteria can be treated quickly before it spreads.

Dr. Luis Martinez, NAMRU-SA Craniofacial Health and Restorative Medicine research microbiologist and principal investigator for the projects, said microorganisms are capable of causing diseases in the body including viruses, bacteria, parasites and fungi. Diseases arising from bacterial infection contribute to approximately 35 percent of all combat casualties.

He said bacterial pathogens are able to enter the wounds of injured service members and, if not treated properly, can cause fatal complications including septic shock, in which internal organs and tissues in the body start to shut down because the bacteria overwhelm the immune system, and bacteremia, the presence of bacteria in the bloodstream.

Martinez said current diagnostic assays and tools used to detect and identify bacterial pathogens, including immuno, biochemical and molecular assays, require a lab setting, extensive training, and personnel. These assays are also time-consuming, sometimes taking from 18 to 24 hours to two weeks to obtain results. In order to circumvent these lengthy and cost-prohibitive steps, substantial focus has been placed on advancements in the field of Raman spectroscopy, owing to its ability to rapidly identify and characterize microbes as well as their responses to various environmental factors...(cont.)

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NAVY ENTOMOLOGISTS TEAM UP TO BUILD DISEASE DETECTION CAPACITY IN HONDURAS

Courtesy of Navy and Marine Corps Public Health Center



HONDURAS - Entomologists from Naval Medical Research Unit No. 6 (NAMRU-6) and the Navy Entomology Center of Excellence (NECE) partnered with Joint Task Force-Bravo Medical Element (JTF-B MEDEL) preventive medicine to develop a disease detection capability for the region. This cutting-edge work is supported by the Armed Forces Health Surveillance Board - Global Emerging Infections Surveillance (GEIS).

Lt. Cmdr. Michael Fisher, NAMRU-6

entomology department head, is leading the effort to bring molecular capabilities as well as the latest in DNA sequencing technology to Soto Cano Air Base. As a regional capability, this technology will allow personnel to rapidly determine if locally-collected ticks, sandflies and mosquitoes are carrying pathogens of disease importance that can threaten the joint warfighter, Honduran Armed Forces and civilian populations.

“The DNA sequencing technology we propose is highly flexible, ideal for far-forward field sites and can produce results in less than 24 hours,” said Fisher. “This has the potential to provide actionable data that can immediately alert the regional public health authorities to prevent large outbreaks and provide commanders a risk assessment threat to their troops.”

Leishmaniasis, malaria, dengue and Chagas disease are a few of the diseases known to be present in Honduras.

The ongoing, long-term collaboration between JTF-B MEDEL preventive medicine and the Ministry of Health in the Comayagua district was instrumental in identifying where this new capability can strengthen the public health in the region, building on previous assistance in testing water quality, and the need for rapid, near real-time diagnostics of disease vectors.

“I was really impressed with the level of organization of their public health vector...(cont.)

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NHRC RESEARCHERS EXHIBIT SCIENCE AND TECHNOLOGY AT FLEET WEEK

By John Marciano, NHRC PAO



SAN DIEGO - Researchers from Naval Health Research Center (NHRC) set up an impressive exhibit on Broadway Pier during San Diego Fleet Week activities to share their knowledge, demonstrate technology and test the skills of many curious visitors to the Qualcomm Innovation Zone experience.

This year’s Fleet Week included a Student STEM Day for local science, technology, engineering and math (STEM) students, Oct. 25. The Innovation Zone was designed to

introduce children of all ages the advanced and innovative technology and research of the U.S. Navy, Marine Corps and Coast Guard.

“On day one, more than 2,400 San Diego area STEM students engaged with our scientists in mini experiments, question and answer games, and just seemed to have a lot of fun,” said Lt. Cmdr. Stephen Eggen, NHRC deputy chief scientist.

At the kick-off evening reception, Oct. 24, invited dignitaries stopped by NHRC exhibits to meet the scientists and learn more about the research center’s capabilities.

“This was our first time exhibiting on the pier, and it was inspiring to see such interest in our research, especially with the youth on STEM Day and throughout the week. We look forward to coming back next year, and further engagement with fleet week organizers,” said Capt. Marshall Monteville, NHRC commanding officer.

Fleet Week San Diego, an annual event in San Diego for more than 20 years, gave NHRC scientists the opportunity to introduce their varied scientific projects and share with the public the invaluable work being done by and for the military.

The NHRC mission is to focus on the unique health needs of our nation’s warfighters and...(cont.)

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NAMRU-SA FOCUSES ON IMPROVING FILTRATION DEVICE TO REMOVE DENTAL WASTE

Courtesy of Joint Base San Antonio - Fort Sam Houston



SAN ANTONIO - Improving filtration devices that capture dental waste and keep the environment safe is the focus of a project being conducted by dental researchers at Naval Medical Research Unit - San Antonio (NAMRU-SA), located aboard Joint Base San Antonio - Fort Sam Houston.

These researchers are testing and developing options for Navy dental facilities, which use chairside amalgam separators to remove amalgam particulate waste from the wastewater so it isn't released into the environment.

The amalgam separator is a cylindrical device attached to a dental chair that filters amalgam, a mixture of metals including mercury, which is used by dentists for large teeth restorations and to fill in cavities.

The amalgam separator uses a pleated filter inside of it, which, because it is folded, provides a very large surface area in a small space. This large surface area allows it to filter out most of the amalgam waste, while extending the service life of the separator.

Dental amalgam is an alloy comprised of 40 to 50 percent mercury along with silver, tin and copper. The amalgam is made by combining liquid mercury with the other metals in powdered form, yielding a paste which sets hard in minutes. The mixing is done in self-contained, pre-measured capsules which ensure optimal alloy formulation and prevent any leakage of mercury.

Dr. Dorian Olivera, NAMRU-SA Environmental Surveillance Department research toxicologist and principal investigator, said amalgam is effective and safe when used for teeth restorations, but waste particles from its placement or removal can be harmful if it enters the environment through disposal into wastewater...(cont.)

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OPTIMIZING PERSONNEL SELECTION, UNMANNED AIRCRAFT SYSTEMS

By Megan Mudersbach, NAMRU-D PAO



DAYTON, Ohio - A multi-institution research team completed a four-year collaborative project to develop a reliable and valid selection test for unmanned aircraft system (UAS) operator candidates within the Navy and Marine Corps with applicability across the Department of Defense (DoD). The project is called Selection of UAS Personnel or SUPer.

“The use of UAS has increased significantly in recent years across the

DoD. Unlike manned aviation, these platforms represent a unique new domain which currently has no validated tools for selecting and classifying UAS operator candidates,” said Cmdr. Tatana Olson, SUPer’s government lead and deputy director of Naval Aerospace Medical Research Laboratory (NAMRL) at Naval Medical Research Unit Dayton (NAMRU-Dayton).

Sponsored by the Office of Naval Research, Cmdr. Olson and Dr. Henry Williams, NAMRL senior scientist, worked with Naval Aerospace Medical Institute (NAMI), Air Force Personnel Center, 711th Human Performance Wing, U.S. Naval Air Systems Command and Georgia Institute of Technology and transitioned the SUPer test battery to NAMI where it will be maintained and administered by NAMI for future UAS operator selection applications.

SUPer, a large and complex study, involved lab data collection at Georgia Tech and field data collection at 11 sites across the country. Portions of the prototype selection test were administered to more than 1,500 individuals, assessing memory, spatial, math/quantitative, science/technical knowledge, and perceptual speed.

Effective personnel assessment and selection procedures identify individuals who possess a minimum level of qualifications and the aptitude to acquire the relevant knowledge, skills, and abilities to perform specific tasks and missions.

“Done properly, selection procedures minimize training attrition, improve retention, and...(cont.)

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CONGRESSMAN VISITS NAVAL HEALTH RESEARCH CENTER

Courtesy of Naval Health Research Center Public Affairs



SAN DIEGO - The Honorable Rep. Scott Peters, from California’s 52nd district, visited Naval Health Research Center (NHRC) to meet with staff and learn more about the only Department of Defense (DoD) medical research laboratory on the West Coast, March 27.

Peters, a member of the House Committee on Veterans’ Affairs and co-founder and co-chair of the congressional life sciences caucus, toured NHRC’s infectious diseases and warfighter performance labs, talked with scientists about current research, and

attended a town hall with staff during the visit.

Designated the DoD deployment health research center since 1999, NHRC is located in Point Loma, a short distance from a major military medical center, several Marine Corps bases, numerous fleet resources, and a recruit training command, which gives scientists the opportunity to conduct research relevant to the needs of operational forces.

San Diego, as Peters pointed out during his visit, is also a biotech industry hub and home to several academic and medical research institutions. This makes NHRC’s location ideal for forging research partnerships that support innovative solutions to the health threats modern warfighters face.

“All of our research is geared towards improving the health and readiness of our warfighters and their families,” said Capt. Matthew Hebert, NHRC’s executive officer. “Our expertise ranges from protecting our armed forces from infectious disease threats to improving physical and mental health, boosting resilience, and optimizing human performance.”

While touring the warfighter performance laboratory, Peters met with researchers who study sleep and fatigue mitigation, injury prevention and rehabilitation, and environmental physiology to improve the health, survivability, performance, and readiness of military members...(cont.)

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NMRC RESEARCHERS PRESENT GROUNDBREAKING SCRUB TYPHUS STUDY AT ASTMH ANNUAL MEETING

Courtesy of Naval Medical Research Center Public Affairs



NEW ORLEANS - Naval Medical Research Center (NMRC) scientists presented their groundbreaking scrub typhus study during the 2018 American Society of Tropical Medicine and Hygiene (ASTMH) Annual Meeting in New Orleans, Oct. 28 - Nov. 1.

The scientists worked with researchers at the National Taiwan University to determine if *Leptotrombidium* mites have unique genes, distinctly different from disease carriers, such as the

yellow fever mosquito (*Aedes aegypti*). The first of its kind study, held in Taiwan, sequenced two common scrub typhus carriers.

According to Dr. Chien-Chung Chao, research chemist, Infectious Diseases Directorate, NMRC, and a principal investigator on the study, warfighters are at a greater risk for infection due to the growth in geographic distribution of the disease.

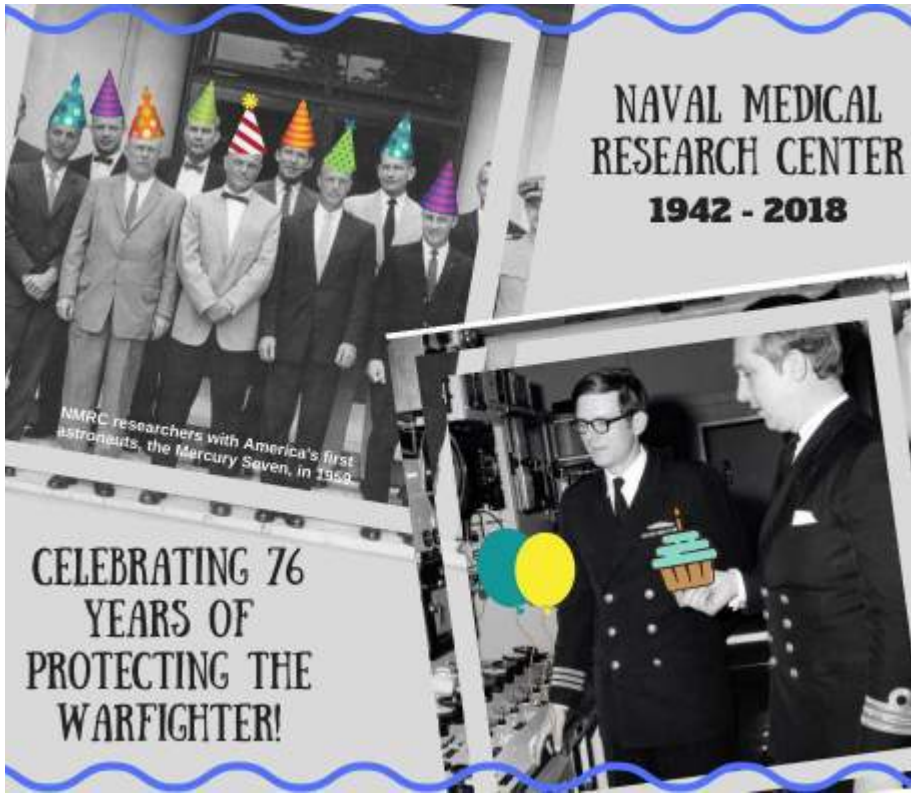
“Scrub typhus has caused significant disruption in military operations throughout World War II, the Korean War, and the Vietnam War,” said Chao. “This study provides the molecular basis to investigate the transmission of *Orientia tsutsugamushi* from mites to mammalian hosts so that proper vector control protocol can be implemented to prevent any negative impact on deployed troops and future military operations.”

Scrub typhus, also known as Tsutsugamushi disease, is a mite-borne, fever-inducing illness, common in eastern and southern Asia, northern Australia, and far-eastern Russia. The study involved sequencing the DNA of engorged chigger-mites (larval form). The researchers concluded the average length of mRNA was shorter and number of exons was less in these chigger-mites than those of mosquitoes, which gives them a better understanding of chigger-mites and how to characterize their salivary secretions...(cont.)

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NMRC CELEBRATES ALMOST EIGHT DECADES PROTECTING THE HEALTH OF THE WARFIGHTER THROUGH RESEARCH AND INNOVATION

Courtesy of Naval Medical Research Center Public Affairs



SILVER SPRING, Md. - Naval Medical Research Center (NMRC) celebrated its 76th birthday during a ceremony Oct. 26. The ceremony gave command leadership, researchers, and staff the opportunity to commemorate the milestone and reflect on NMRC's decades-long history supporting, protecting, and promoting the health of the warfighter through pioneering medical research solutions. Capt. Adam Armstrong, NMRC's commander, welcomed attendees and thanked them for their many contributions, and for sharing his vision for the future and continued success among the entire Navy Medicine Research and Development Enterprise.

A short video produced by André B. Sobocinski, historian, Bureau of Medicine and Surgery (BUMED) was then played.

Afterwards Armstrong closed the ceremony by cutting a birthday cake adorn with the NMRC logo with a ceremonial cutlass.

According to Sobocinski, NMRC was originally established as the Naval Medical Research Institute (NMRI) in October 1942 on the campus of what used to be known as the National Naval Medical Center in Bethesda, Maryland.

“NMRI’s mission was to find solutions to the practical medical problems arising from World War II,” he said...(cont.)

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NMRC CELEBRATES NAVY’S 243RD BIRTHDAY



2018 NAVY JUNIOR OPTOMETRIST, NAMRU-DAYTON SCIENTIST

By Megan Mudersbach, NAMRU-D PAO



SAN ANTONIO - Lt. Cmdr. Micah Kinney, Naval Aerospace Optometrist (OD) assigned to Naval Medical Research Unit Dayton (NAMRU-Dayton), received the 2018 Navy Junior Optometrist of the Year award from the Armed Forces Optometric Society (AFOS) during the Federal Service Optometry Meeting in San Antonio, November 5.

The AFOS award recognizes significant contributions to the advancement of AFOS and optometry.

“I was surprised considering how many great ODs we have serving in the Navy. I know there are many of my colleagues out there doing great things to support the warfighter and it is a huge honor to have been selected,” said Lt. Cmdr. Kinney.

For Lt. Cmdr. Kinney, serving in the military has led to learning from professionals not only in his field but in many other fields in medicine and military settings.

“Having the opportunity to receive mentorship is priceless,” he said.

Kinney works with the vision science team at the Naval Aerospace Medical Research Laboratory (NAMRL) and is the Department Head for Acceleration and Sensory Sciences.

“I am excited for the great things we are doing at NAMRU-Dayton. We have been very fortunate to work with our Air Force colleagues to address eye protection for the U.S. Coast Guard aviation fleet,” said Kinney.

The final phase of flight testing of USAF prototypes is set to begin in January 2019.

In addition, Kinney is supporting a joint project between NAMRU-Dayton and...(cont.)

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FIRST WOMAN TAKES REIN OF NAVAL SUBMARINE MEDICAL RESEARCH LABORATORY

By Maria Pinto, NSMRL Collateral PAO



first woman to take the reins of NSMRL.

GROTON, Conn. - Naval Submarine Medical Research Laboratory (NSMRL) held a change of command ceremony topside of the world’s first nuclear submarine USS Nautilus (SSN-571) at the Submarine Force Library and Museum, Naval Submarine Base New London, Aug. 6.

During the ceremony, presided over by Rear Adm. Paul D. Pearigen, commander of Navy Medicine West, Capt. Kim Lefebvre assumed command from Capt. Fred Yeo and became the

first woman to take the reins of NSMRL. During her speech to more than 80 staff, family, friends and guests she recognized the high standards set by Yeo, who will become officer in charge of Naval Undersea Medical Institute, aboard Naval Submarine Base New London.

“I’m honored to take command of Naval Submarine Medical Research Laboratory and look forward to maintaining the momentum created by Captain Yeo and continuing to move us forward,” said Lefebvre. “I look forward to leading the team of outstanding researchers here at NSMRL and continuing to make a difference in the health and safety of the individuals that serve in the submarine forces.”

Before assuming command of NSMRL, Lefebvre commanded Naval Hospital Sigonella, Italy from August 2016 to July 2018 and was executive officer at Naval Health Research Center in San Diego from May 2014 to June 2016.

By coming to Groton, Lefebvre returns to her original New England roots. She was commissioned in the Navy Medical Service Corps in Newport, Rhode Island, in the summer of 1991 after graduating with a Bachelor of Science degree in Pharmacy from the University of Rhode Island in...(cont.)

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CEREMONY MARKS COMMAND'S RECENT CHANGE IN LEADERSHIP

By Megan Mudersbach, NAMRU-D PAO



DAYTON, Ohio - Naval Medical Research Unit Dayton (NAMRU-Dayton) held a change of command ceremony at Wright-Patterson Air Force Base Aug. 6.

During the ceremony Capt. Matthew W. Hebert assumed command from Capt. Rees L. Lee.

As the presiding officer Rear Adm. Paul Pearigen, commander, Navy Medicine West, addressed attendees and members of the official party.

“It is a distinct honor and privilege for me to be here today as we gather to mark this transfer of authority, responsibility and accountability from one accomplished naval officer to another,” he said.

As commanding officer Lee oversaw the success of the two science directorates, the Naval Aerospace Medical Research Laboratory and the Environmental Health Effects Laboratory, in addition to the support staff.

“I really had no idea the tremendous challenges and successes that were in store,” said Lee. “To say that this command tour has been rewarding would be a woeful understatement.”

During his tenure, the command continued to respond to the needs of the military by increasing the size of the scientific staff by more than 60 percent.

“When Naval Aviation needed to understand physiologic episodes affecting some of our fighter pilots, you responded, by developing 23 new initiatives, quadrupling the funding dedicated to this effort,” Lee said.

According to Lee, the success of NAMRU-Dayton is dependent on the mutual support of many, many collaborators...(cont.)

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FROM BODY ARMOR TO MOSQUITO JACKETS: A LOOK BACK AT THE NAVY MEDICAL FIELD RESEARCH LABORATORY (NMFRL)

By André B. Sobocinski, BUMED Historian



In June 1951, the Navy shipped prototypes of its newly designed armored utility jacket to Korea where it would be worn by select Marine and Army combat units. After three months of assessing its value, Navy medical observers in theater concluded that this protective clothing was universally desired by combat troops, had a positive “psychological influence on morale” and minimized the risk of fatality. The Navy was still perfecting the design when word of this “miraculous life saving device” spread across the combat theater leading to fervent requisitions from the services. By June 27, 1953 - the date of the Korean War cease-fire - the Navy had received a total of 121,000 orders from the Army and Marine Corps.

The armored utility jacket was the product and brainchild of the Naval Medical Field Research Laboratory (NMFRL) in Camp Lejeune, North Carolina. Founded August 30, 1943, through a joint agreement by Bureau of Medicine and Surgery (BUMED) and the Commandant of the Marine Corps, NMFRL was dedicated to “scientific research, development and testing pertinent and peculiar to the practice of amphibious medicine.” The laboratory’s proximity to amphibious personnel training under simulated battle conditions allowed for unique “frontline” evaluation of field-level conditions.

At its peak, the NMFRL was comprised of physicians, scientists, engineers and technicians organized into eight specific departments - Biophysics, Microbiology, Entomology, Body Armor and Wound Ballistics, Physiology, Biochemistry, Psychology, and Equipment Testing and Development...

Although body armor may have been the lab’s most significant early achievement, over its three decades of existence its staff was actively engaged in everything from the investigation of UV light protection to the field evaluation of adenovirus vaccine to perfecting cold weather gear to studying heat stress casualties.

During the Vietnam War, NMFRL scientists devised a silicone-based ointment to prevent immersion foot, an incapacitating condition caused by overexposure to water. The Navy-led field studies revealed that the ointment prevented 75 percent of immersion foot cases in battlefield conditions. In 1966, Marine Corps Commandant Gen. Wallace Greene would call the silicone ointment one of the most significant medical innovations of the war.



For years NMFRL investigated methods for controlling mosquito-based diseases. In the mid-1960s, the lab began experimenting with light-weight, wide-mesh netting treated with insect repellent for use in field tents. Out of this research came the development of the so-called anti-mosquito netting jacket or mosquito shirt. Like the field tents, the polyester-cotton jacket was treated with an insect repellent that produced a “vapor barrier” between the openings of the jacket’s mesh fabric. Lab personnel successfully field tested the jacket in Alaska, Africa, Indonesia, Panama, Vietnam and Guantanamo Bay, Cuba and found that it could protect the wearer for up to a thousand hours. The jacket would later become commercially available and released under an assortment of names (e.g. “bug jacket”).

Despite the beneficial work conducted by NMFRL, medical leadership questioned the long-term value of the laboratory in the post-Vietnam era. Originally partly subsidized by the Marine Corps, BUMED would assume complete funding responsibility beginning in fiscal year 1972. Soon after, at the behest of BUMED, NMFRL was formally disestablished July 1, 1976, just short of its 33rd birthday.

HEAD OF NMRC BIOLOGICAL DEFENSE RESEARCH DIRECTORATE RECEIVES DISTINGUISHED ALUMNUS AWARD

Courtesy of University of New Mexico Alumni Association



ALBUQUERQUE, N.M. - The School of Medicine’s class of 1978 did something no other class ever did - it created the legendary “box.”

Students packed the lecture hall the first day of every block to see what the box would do. On the first day of urology, for example, salty yellow liquid shot out. The box also fired ping pong balls at a student who regularly asked too many questions, and flashed signs at professors whose lectures ran overtime.

On Veteran’s Day, a flag rose out of the box and a fan blew, waving the flag while a Jimi Hendrix-style national anthem played on the saxophone...(cont.)

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NSMRL CREATES DISPLAY TO REMEMBER THE 100TH ANNIVERSARY OF WWI

By Capt. Marcus Larkin



the world.

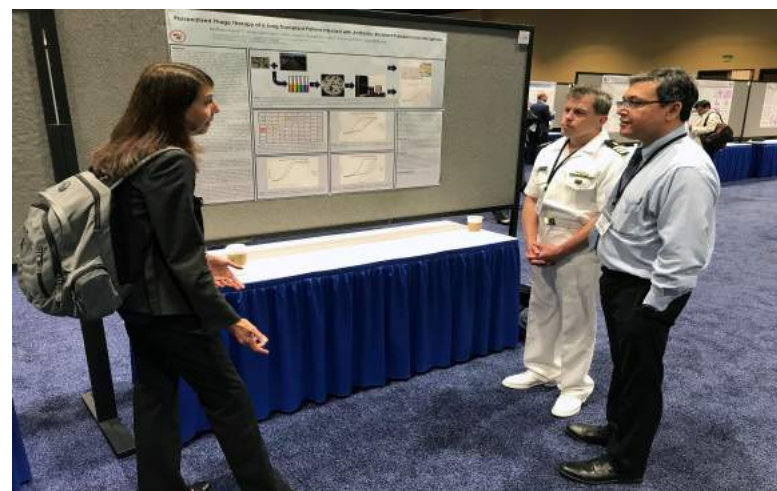
GROTON, Conn. - Naval Submarine Medical Research Laboratory (NSMRL) commemorated the 100th anniversary of the signing of the armistice to end World War I Nov. 13.

After a personnel uniform inspection Capt. Kim Lefebvre, NSMRL’s commanding officer, and Chief Hospital Corpsman Westley Durnell, the command’s senior enlisted leader, discussed the “War to End All Wars” and the impact it had on those who lived through it, in the U.S., and in other countries throughout

In addition, a WWI remembrance display was set up in the library by Librarian Cheryl Baker, and Capt. Marcus Larkin, MSC. Several staff members brought in personal mementos from the war and shared stories about family members who had been veterans of WWI. One of the more poignant mementos was a ceramic red poppy presented to NSMRL by United Kingdom Exchange Officer, John M. Clarke, Surgeon Commander of the Royal Navy, stationed at the laboratory in 2014.

CONGRATULATIONS TO OUR NAVY MEDICINE R&D ENTERPRISE RESEARCHERS WHO PRESENTED THEIR INNOVATIVE WORK AT MHSRS AND ASTMH THIS YEAR!

As the DoD's premier scientific meeting, MHSRS helps to facilitate the exchange of information between almost 3,000 attendees from around the world on health care topics related to combat casualty care, rehabilitative medicine, infectious diseases, medical simulation, and the operational readiness of the warfighter. This year, NMR&D researchers presented their findings on malaria, wound infections, traumatic brain injury, mental health, Shigella, respiratory illness, and more.



As the largest scientific organization of experts dedicated to reducing the burden of infectious disease, the ASTMH Annual Meeting draws more than 4,000 attendees from around the world and provides an opportunity for global health professionals, military personnel, researchers, industry leaders, and academics to exchange scientific information. This year, our researchers presented their findings on malaria, dengue, antibiotic resistance, Zika virus, and more.



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NAVY MEDICINE R&D ENTERPRISE COMMAND



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